

NOTE:

These DRAFT regulations include citations to other draft regulations that have not yet been adopted, but are in the regulatory process. For example, Section 60320.080(d)(4)(B) of these DRAFT regulations refers to "Section 64533, chapter 15.5, title 22." The DHS regulations that include Section 64533 have not yet been adopted, but a draft version is available at the Drinking Water Program's website [Regulations, at <http://www.dhs.ca.gov/ps/ddwem/default.htm>, see Disinfection Byproducts]

Anyone using these DRAFT regulations in the preparation of other documents should verify the citations from the published laws and regulations.

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This draft reflects the Department of Health Services' current thinking on the regulation of recharge of groundwater with recycled water. Any informal comments you might have on this draft can be emailed to Bob Hultquist at bhultqui@dhs.ca.gov or Jeff Stone at jstone1@dhs.ca.gov.

**Title 22, CALIFORNIA CODE OF REGULATIONS
DIVISION 4. ENVIRONMENTAL HEALTH
CHAPTER 3. RECYCLING CRITERIA**

ARTICLE 1. DEFINITIONS**Section 60301.080. 24-hour Composite Sample.**

"24-hour composite sample" means a combination of no fewer than eight individual samples obtained at equal time intervals during a 24-hour period, such that the volume of each individual sample is proportional to the flow at the time of sampling.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.120. Aquifer.

"Aquifer" means a geologic formation, group of formations, or portion of a formation capable of yielding significant quantities of ground water to wells or springs.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.190. Diluent Water.

“Diluent water” means water that is not treated wastewater that is used to supplement the recycled water in a GRRP prior to surface spreading or injection.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.370. Groundwater.

“Groundwater” means water below the land surface in a zone of saturation.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.380. Groundwater Basin.

“Groundwater basin” means a subsurface structure having the character of a basin with respect to the collection, retention, and outflow of water or an aquifer or system of aquifers, whether basin-shaped or not, that has reasonably well defined boundaries and more or less definite areas of recharge and discharge.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.390. Groundwater Recharge Reuse Project (GRRP).

“Groundwater recharge reuse project (GRRP)” means a project that uses recycled water and has been designed, constructed, or operated for the purpose of recharging by infiltration or injection of recycled water, a groundwater basin designated in the Water Quality Control Plan [defined in Water Code section 13050(j)] for use as a source of domestic water supply.

NOTE: Authority cited: Section 13521, Water Code.
Reference: Sections 13520, 13521, and 13050(j), Water Code.

Section 60301.610. Mound.

“Mound” means a localized, temporary elevation in a water table that builds up as a result of the localized downward percolation of waters that have been discharged to a spreading area.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.670. Project Sponsor.

"Project sponsor" means an agency or agencies that receives water recycling requirements for a GRRP from a RWQCB.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.680. Public Water System.

"Public water system" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. A public water system includes the following:

(a) Any collection, treatment, storage, and distribution facilities under control of the operator of the system which are used primarily in connection with the system.

(b) Any collection or pretreatment storage facilities not under the control of the operator that are used primarily in connection with the system.

(c) Any water system that treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 116275(h), Health and Safety Code.

Section 60301.680. Recharge Water.

"Recharge water" means recycled water that may have been supplemented with diluent water, from the point that the recycled water or diluted recycled water has been spread onto or injected into the ground until it has met the criteria in section 60320.010(c) or (d).

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 116275(h), Health and Safety Code.

Section 60301.690. Recycled Water.

“Recycled water” means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13050, Water Code.

Section 60301.705. Recycled Water Contribution (RWC).

“Recycled water contribution (RWC)” means the fraction of the total volume of GRRP recharge water that is recycled water.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.770. RWQCB.

“RWQCB” means Regional Water Quality Control Board.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.780. Saturated Zone.

“Saturated zone” means an underground zone in which all interstices in and between natural geologic materials are filled with water.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.810. Spreading Area.

“Spreading area” means an area where recharge water is applied to the land surface for purposes of recharging the groundwater.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.840. Subsurface Injection.

"Subsurface injection" means the controlled insertion of recharge water below the ground surface resulting in the recharge of a groundwater basin.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.850. Surface Spreading.

"Surface spreading" means the controlled application of recharge water to the spreading area resulting in the recharge of a groundwater basin.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301. 860. Total Nitrogen.

"Total nitrogen" means the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as nitrogen.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60301.870. Total Organic Carbon (TOC).

"Total organic carbon (TOC)" means oxidizable organic carbon measured by an approved laboratory pursuant to subsection 64415(a) using Method 5310C, Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, with a reporting level of 0.10 mg/l, and precision and accuracy within plus-and-minus 20 percent (+/- 20%).

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60302. Source Specifications.

The requirements in this chapter shall apply only to recycled water of municipal wastewater origin.

NOTE: Authority cited: Section 13521, Water Code.
Reference: Sections 13520 and 13521, Water Code.

ARTICLE 5.1. PLANNED GROUNDWATER RECHARGE REUSE PROJECTS

Section 60320. Groundwater Recharge.

~~(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.~~

~~(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.~~

~~(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.~~

Note: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code.

Reference: Section 13520, Water Code.

Section 60320. Applicability and General Requirements.

(a) This article shall apply only to projects designated as groundwater recharge reuse projects (GRRPs) by a RWQCB.

(b) All recycled water used for a GRRP shall be from a wastewater management agency that administers an industrial pretreatment and pollutant source control program that includes contaminants specified by the Department based on a review that includes the engineering report and other available data on potential groundwater contaminants. The source control program shall include:

(1) An assessment of the fate of the specified contaminant compounds through the wastewater and recycled water treatment systems.

(2) A source investigation and monitoring program focused on the specified contaminants and their potential ability to persist through the treatment systems.

(3) A comprehensive outreach program to industrial, commercial and residential communities within the sewage collection agency's service area to manage and minimize the discharge of compounds of concern at the source.

(4) A proactive program for maintaining an inventory of compounds discharged into the wastewater collection system so that new compounds of concern can be evaluated rapidly.

(c) All diluent water used for a GRRP shall be from a source that has been evaluated by a source water assessment.

(d) Prior to the onset of operation, each GRRP shall have in place an approved plan providing for an alternative source of domestic water supply, or Department approved treatment mechanism, to any user whose producing well is found to exceed California drinking water standards, or when the Department finds that the groundwater has been degraded as a result of the GRRP.

(e) The State Department of Health Services will hold a public hearing for each GRRP prior to submitting its recommendations for the initial permit to the RWQCB, and at any time an increase in RWC has been proposed.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.010. Control of Pathogenic Microorganisms.

(a) For each GRRP, the wastewater shall be treated to meet the following:
(1) The definition of filtered wastewater, pursuant to section 60301.320;
and
(2) The definition of disinfected tertiary recycled water, pursuant to section 60301.230.

(b) If the recycled water being used for recharge does not meet the criteria in sections 60301.230 and 60301.320, pursuant to section 60321 (Sampling and Analysis), the GRRP shall:

- (1) Suspend recharge of the recycled water until the criteria is met; and
- (2) Inform the Department and the RWQCB in the next monthly report.

(c) For a surface spreading project, all the recharge water shall be retained underground for a minimum of six months prior to extraction for use as a drinking water supply, and shall not be extracted within 500 feet of a point of recharge.
(Also, see Section 60320.095. Alternatives)

(d) For a subsurface injection project, all the recharge water shall be retained underground for a minimum of twelve months prior to extraction for use as a drinking water supply, and shall not be extracted within 2000 feet of a point of recharge. (Also, see Section 60320.095. Alternatives)

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.020. Control of Nitrogen Compounds.

(a) For an existing GRRP with its existing Department-specified maximum average RWC, the total nitrogen concentration of the recycled water, or if supplemented with diluent water, the blend of the two, shall not exceed the total nitrogen level specified by the Department based on its review of the GRRP's historical nitrogen data and other operational data.

(b) For any new GRRP and any existing GRRP with an increased Department-specified maximum average RWC, the total nitrogen concentration of the recycled water, or if supplemented with diluent water, the blend of the two, shall not exceed 5 mg/L as nitrogen unless, for surface spreading projects, the project sponsor demonstrates that the nitrite and nitrate drinking water standards are consistently met in the recharge water.

(c) Each week the GRRP shall collect and analyze two grab or 24-hour composite samples at least three days apart of:

- (1) Recycled water, or if supplemented with diluent water, the blend of the two, or
- (2) Recharge water prior to its reaching the regional groundwater table, if the GRRP has been approved for mound monitoring, pursuant to section 60320.050.

(d) For total nitrogen analyses, each GRRP shall require the laboratory to:
(1) Complete each analysis within 24 hours; and (2) If the results indicate total nitrogen at a level greater than the applicable level or MCL in subsection (a) or (b), report the result to the GRRP within the same 24 hours.

(e) Within 48 hours of being informed by the laboratory pursuant to subsection (d), the GRRP shall collect and analyze a confirmation sample. If the average of the initial and confirmation samples also exceeds the applicable criterion, the GRRP shall:

- (1) Investigate the causes and make appropriate corrections, and
- (2) Within 48 hrs of receiving the confirmation sample result, notify the Department and RWQCB.
- (3) If the average of all samples collected over the ensuing two week period exceeds the applicable criterion, suspend recharge of the recycled water until appropriate corrections are made. (*Also, see Section 60320.095. Alternatives*)

(f) Each GRRP shall monitor diluent water quarterly for nitrate and nitrite; within 48 hours of being informed by the laboratory of a nitrate and/or nitrite

result greater than an MCL, the GRRP shall collect and analyze a confirmation sample. If the average of the initial and confirmation samples exceeds an MCL, the GRRP shall:

- (1) Investigate the causes and make appropriate corrections, and
- (2) Within 48 hrs of receiving the confirmation sample result, notify the Department and RWQCB.
- (3) Each week the GRRP shall collect and analyze two grab or 24-hour composite samples at least three days apart.
- (4) If the average of all samples collected over the ensuing two week period exceeds the applicable criterion, suspend recharge of the recycled water, until appropriate corrections are made. (*Also, see Section 60320.095. Alternatives*)

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.030. Control of Regulated Chemicals and Physical Characteristics.

- (a) The recycled water shall be in compliance with the following:
 - (1) Primary maximum contaminant levels specified in chapter 15: Inorganic chemicals in table 64431-A (except for nitrogen compounds); radionuclides in table 4, section 64443; organic chemicals in table 64444-A (See Endnote 1)
 - (2) MCLs for disinfection byproducts in section 64533, chapter 15.5;
 - (3) Action levels for lead and copper in section 64678, chapter 15;
 - (4) Secondary MCLs for the constituents and characteristics in tables 64449-A and B ("Upper" levels), chapter 15.

(b) On a quarterly basis at regular intervals, the GRRP shall collect 24-hour composite or grab samples of the recycled water to determine compliance with paragraphs (a)(1), (2), and (3). The GRRP shall determine compliance on the basis of a running-quarterly average, calculated each quarter using the previous four quarters of data. If the recycled water is out of compliance, the GRRP shall submit a report to the Department and the RWQCB that describes the reasons and the corrective actions taken.

(c) Each year, the GRRP shall collect a representative grab sample of the recycled water to determine compliance with subsection (a)(4); if the single sample result (or average of samples collected during the year, if more than one) exceeds a secondary MCL, the GRRP shall inform the Department and RWQCB and describe the reasons and the corrective actions taken in the next monthly report.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.040. Control of Nonregulated Chemicals.

(a) The TOC in any portion of the filtered wastewater that is not subsequently treated with reverse osmosis shall:

(1) Not exceed 16 mg/L for more than two consecutive samples; if the TOC fails to comply with this criteria, the GRRP shall suspend recharge of recycled water until the TOC is less than 0.01 g/L; and

(2) Be monitored as follows:

(A) For one year after initial startup, the GRRP shall collect and analyze a 24-hour composite sample twice a week;

(B) Subsequently, the Department may allow the GRRP to collect and analyze weekly 24-hour composite samples, based on its review of the first year of data.

(b) Any existing GRRP with its existing Department-specified maximum average RWC shall not exceed a TOC level specified by the Department based on its review of the GRRP's historical TOC data and other operational data. The TOC shall be measured as follows:

(1) In the recycled water; or

(2) For a surface spreading project approved for mound monitoring pursuant to section 63020.050, in the recycled water in the mound. (*Also, see Section 60320.095. Alternatives*)

(c) Any new GRRP and any existing GRRP with an increased Department-specified maximum average RWC shall not exceed a TOC level of 0.5 mg/L divided by the Department-specified maximum average RWC, or the recycled water shall be treated by reverse osmosis to do so. For a GRRP using direct injection, the entire wastewater stream shall be treated with reverse osmosis. The TOC shall be measured as follows:

(1) In the recycled water; or

(2) For a surface spreading project approved for mound monitoring pursuant to section 63020.050, in the recycled water in the mound.

(d) To determine compliance with subsections (b) and (c),

(1) Each week during which the GRRP is recharging, the GRRP shall collect a 24-hour composite, except that if 100 per cent of the wastewater stream is treated by reverse osmosis, the GRRP may collect a grab sample;

(2) Each month, the GRRP shall determine whether the average of the most recent 20 TOC samples exceeds the applicable criterion;

(A) If the criterion is exceeded, the GRRP shall suspend recharge of the recycled water until the criterion are met and, within 7 days of the suspension, notify the Department and the RWQCB;

(B) New GRRPs shall begin determining compliance as soon as 4 samples have been collected, averaging all available samples up to 20;

(3) If the average of the last four samples exceeds the applicable criterion, the GRRP shall submit a report to the Department and RWQCB within 60 days that describes the reasons and the corrective actions that have been taken to avoid future occurrences.

(e) The GRRP shall comply with the criteria for the monthly-running-average RWC (average RWC) as follows:

(1) The average RWC in each aquifer shall not exceed the maximum average RWC specified by the Department, based on its review of the GRRP's engineering report (section 60320.080).

(2) Once a month, the average RWC shall be calculated by dividing the total volume of recycled water recharged during the preceding 60 calendar months by the total volume of recharge water during that period at the recharge facilities used by the GRRP. If the average RWC does not comply with paragraph (1), the GRRP shall notify the Department and RWQCB within 7 days and submit a report to both within 60 days describing the reason and corrective actions taken to avoid future occurrences.

(f) The GRRP shall conduct the following monitoring (See Endnote 2) and report any positive results to the Department and the RWQCB in the next monthly report:

(1) Each quarter during the first year of operation the GRRP shall sample and analyze the recycled water for:

(A) Unregulated chemicals in table 64450, chapter 15;

(B) Priority Toxic Pollutants [chemicals listed in the Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, and 40 CFR Part 131, Federal Register 65(97), May 18, 2000, p. 31682];

(C) Chemicals with state action levels that the Department has specified (see Endnote 3), based on a review of the GRRP engineering report and the affected groundwater basin(s); and

(D) Other chemicals that the Department has specified (See Endnote 4) based on a review of the GRRP engineering report and the affected groundwater basin(s).

(2) Subsequently, the Department may allow monitoring to be reduced to annually for the chemicals in paragraphs (1)(A, B, C and D) based on initial sample results.

(3) Annually, the GRRP shall monitor the recycled water for pharmaceuticals, endocrine disrupting chemicals and other chemical indicators of municipal wastewater presence specified by the Department (See Endnote 5), based on a review of the GRRP engineering report and the affected groundwater basin(s).

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.050. Mound Monitoring for TOC and Nitrogen Compounds.

To obtain approval for mound monitoring in a spreading recharge project, a GRRP shall demonstrate the following to the Department:

(a) For TOC monitoring, that mound samples are representative of undiluted recycled water or that the TOC sample can be used to determine the degree of recycled water TOC reduction through the soil treatment;

(b) For the nitrogen compounds monitoring, that mound samples are representative of recharge water; and

(c) That the mound monitoring is representative of mounds of recharge water throughout the spreading area.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.060. Department-Specified Maximum Average RWC Greater than 0.50.

(a) A GRRP may apply to increase the Department-specified maximum average RWC for a GRRP to greater than 0.50 by submitting a proposal to the Department. The proposal shall include a comprehensive report prepared and signed by an engineer registered in California and experienced in the fields of wastewater treatment and public water supply; the report shall include, but not be limited to:

(1) GRRP operations, monitoring, and compliance data;

(2) A demonstration that the recharge water has reached at least one GRRP monitoring well for at least one year with an average RWC of at least 0.4 and the GRRP has been in compliance with the existing Department-specified maximum average RWC,

(3) A demonstration that the water quality data collected at the monitoring well used in the demonstration in paragraph (1)

(A) Meets all the primary drinking water standards for the parameters specified pursuant to section 60320.070(b)(2); and

(B) Indicates that the GRRP is not causing the nonregulated contaminants specified pursuant to section 60320.070(b)(2) to increase over the levels in the recycled water;

(4) Any additional analytical and/or treatment studies requested by the Department to make the determination in subsection (b);

(5) Validation of appropriate construction and siting of monitoring wells;

(6) Scientific peer review by an advisory panel that includes, as a minimum, a toxicologist, a registered engineering geologist or hydrogeologist, an

engineer registered in California and experienced in the fields of wastewater treatment and public water supply, a microbiologist, and a chemist; and

(7) An updated engineering report.

(b) Prior to the GRRP's proceeding with an increase in the RWC,

(1) The Department will specify the increment for the increase based on its review of the Engineering Report submitted under subsection (a); and

(2) The project sponsor shall obtain written approval from the Department and the RWQCB.

(c) A GRRP with a Department-specified maximum average RWC greater than 0.50 shall:

(1) Use ultra-violet light treatment with a fluence of at least ____ mJ/cm²* and hydrogen peroxide addition with a dose of at least ____ mg/L* (See Endnote 6) ; and

(2) Conduct a Tentatively Identified Chemicals (TIC) analysis of the recycled water every year.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.065. Operation of the Treatment and Recharge Equipment and Facilities.

(a) Each GRRP shall, for the purposes of protecting public health, ensure that its equipment and facilities for treatment and recharge operate at levels of peak performance in order to limit the presence of contaminants in the recycled water, including:

- (A) regulated contaminants identified in Section 60320.030, and
- (B) nonregulated contaminants identified in Section 60320.040.

(b) Each GRRP shall include in the operations plan developed pursuant to Subsection 60320.080(a) procedures that will be used to ensure that equipment and facilities for treatment and recharge operate at peak performance levels.

Section 60320.070. Monitoring Between GRRP and Downgradient Drinking Water Supply Wells.

(a) Each GRRP shall site and construct monitoring wells, as follows:

(1) At a location between one and three months travel time from the recharge area and at additional points between the recharge area and the nearest downgradient domestic water supply well; and

(2) Such that samples can be obtained independently from each aquifer potentially conveying the recharge water.

(b) Monitoring shall be conducted and reported as follows:

- (1) Each quarter, at a minimum, samples shall be collected at each monitoring well;
- (2) Each sample shall be analyzed for TOC, total nitrogen, constituents and characteristics in tables 64449-A and B, total coliform levels, and any water quality constituents specified by the Department based on the results of the recycled water monitoring conducted pursuant to this chapter; and
- (3) If any of the monitoring results indicates that an MCL has been exceeded or that coliforms are present, the GRRP shall notify the Department and the RWQCB within 48 hours of receiving the result.
- (4) Any positive findings shall be noted in the monthly report to the RWQCB.

(c) Analytical results for chemicals shall be reported directly to the Department, as follows:

- (1) Analytical results of all analyses completed in a calendar month shall be reported to the Department no later than the tenth day of the following month.
- (2) Analytical results shall be reported to the Department electronically using the Electronic Deliverable Format as defined in The Electronic Deliverable Format (EDF) Version 1.2i Guidelines & Restrictions dated April 2001 and Data Dictionary dated April 2001.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.080. Engineering Report.

(a) Any project sponsor proposing a GRRP shall submit an engineering report that includes an operations plan to the RWQCB and the Department. This report shall be prepared by an engineer registered in California and experienced in the fields of wastewater treatment and public water supply, in conjunction with a geologist experienced in hydrogeology and registered in California, and shall satisfy the requirement in section 60323(a).

(b) Proposed GRRPs shall not recharge recycled water until the project sponsor submits a complete engineering report to the RWQCB and the Department and receives a permit from the RWQCB.

(c) For a GRRP with a permit from the RWQCB as of the effective date of this regulation, the project sponsor shall submit an engineering report pursuant to this section to the RWQCB(s) and the Department within two years.

(d) The engineering report shall consist of a comprehensive investigation and evaluation of the GRRP, impacts on the existing and potential uses of the impacted groundwater basin, and the proposed means for achieving compliance with sections 60320.010 through 60320.050 and sections 60325 through 60355. The engineering report shall include, but not be limited to, the following:

- (1) A description of the proposed GRRP, including the anticipated TOC level and proposed RWC;
- (2) An engineering plan of the recycling plant, transmission facilities, spreading basins/subsurface injection wells, and monitoring wells;
- (3) A hydrogeologic study on the impacted groundwater basin that addresses the following:
 - (A) Impact of the recharge project on domestic groundwater sources;
 - (B) Description of any other existing or proposed GRRPs that could impact the groundwater basin, and an estimate of the cumulative impact on water quantity and quality with and without the proposed GRRP;
 - (C) Source, area of recharge, quantity, quality, and groundwater flow patterns of all aquifers in all impacted groundwater basins;
 - (D) The horizontal and vertical extent of the underground zone within which the recharge water has not been retained for the period of time or distance specified in subsection 60320.010(c) or (d), as applicable;
 - (E) The aquifer zone within which the RWC is higher than that proposed pursuant to paragraph (d)(1);
 - (F) For new projects, a description of the pre-project groundwater quality in the impacted groundwater basin;
 - (G) For all wells that will be impacted by the proposed project
 1. Use of each;
 2. Identification of well(s) subject to the highest RWC; and
 3. The estimated or measured shortest recycled water retention time underground and horizontal separation, along with the methods for obtaining these;
 - (H) Quantitative descriptions of the aquifer transmissivity, groundwater movement, historic depth-to-groundwater, safe yield of the basin, influence of localized pumping, and usable storage capacity of the groundwater basin; and
 - (I) Description of any existing or anticipated flows into, or recharges of, the basin that could affect the quality of water in the monitoring wells or drinking water wells downgradient of the GRRP.
- (4) For the wastewater, treated wastewater, or recycled water proposed for use by the GRRP, the results of one year of quarterly monitoring for:
 - (A) TOC, BOD, SS, total coliforms, and total nitrogen;
 - (B) All regulated and unregulated chemicals listed in sections 64431, 64439, 64441, 64443, 64444, 64449, and 64450, chapter 15, and section 64533, chapter 15.5, title 22;
 - (C) Lead and copper;
 - (D) Priority Toxic Pollutants [chemicals listed in the Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, and 40 CFR Part 131, Federal Register 65(97), May 18, 2000, p. 31682]; and
 - (E) Chemicals that have state action levels that have been specified by the Department on the basis of vulnerability.

(5) For any diluent waters proposed for use by the GRRP, a quantitative and qualitative characterization of the water quality, including temporal variations (e.g. stormwater quality);

(6) Identification of the agency responsible for preventing the use of groundwater for drinking water within certain areas pursuant to paragraphs (d)(3)(D) and (E) and subsection 60320.040(f), and the mechanism that will be used;

(7) A contingency plan for diversion of recycled water when required pursuant to sections 60320.010(b)(1), 60320.020(d)((2)(A), and 60320.040(b)(3), (d)(2)(B), and (e)(2)(A);

(8) A description of how the data will be obtained and a sample calculation for RWC;

(9) Identification of the maximum average RWC proposed by the project sponsor for the GRRP, pursuant to section 60320.040(d);

(10) A plan for monitoring groundwater flow and water quality in the impacted groundwater basin, including a map of the locations of monitoring wells in the spreading basin and groundwater basin, details on their construction, and a rationale for their siting;

(11) A water quality monitoring plan for the recycled water, recharge water, diluent water and monitoring wells;

(12) A description of the industrial pretreatment and pollutant source control program, pursuant to section 60320(c);

(13) A list of endocrine disrupting chemicals and pharmaceuticals identified in the wastewater, as well as data on the levels where measurable;

(14) For GRRPs using mound monitoring, a description of the mound monitoring program, including the demonstration in section 60320.050; and

(15) An analysis of the GRRP impact that includes a determination of the possible violations or situations that could occur that might pose a risk to public health and a plan with associated costs for mitigating each along with the financial assurance mechanism that would be utilized. Such violations or situations include, but shall not be limited to:

(A) RWC;

(B) Minimum retention time; and

(C) MCL exceedance or microbiological problem in a drinking water supply well

(e) The operations plan shall include, but not be limited to, the following:

(1) A description of the operational and management personnel, their qualifications, experience, and responsibilities;

(2) If RO membrane technology is used, the routine testing procedures for the integrity of the RO membranes and the RO membrane replacement schedule;

(3) Routine maintenance and performance monitoring for the disinfection system;

(4) Maintenance and calibration schedules for all monitoring equipment, process alarm set points and response procedures for all alarms;

- (5) Water blending plan, as applicable;
 - (6) Maintenance of injection and monitoring wells, and spreading basins;
 - (7) Vector control activities related to the GRRP;
 - (8) A description of how the GRRP will measure the retention time to demonstrate compliance with subsection 60320.010(c) or (d);
 - (9) A list of the pesticides and herbicides used in the spreading facilities;
- and
- (10) The procedures used to operate for compliance with subsections 60320.030(d) and 60320.040(d).

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.090. Annual and Five Year Reports.

(a) Every year, the project sponsor shall provide to the RWQCB, the Department, and all downgradient public drinking water systems a report prepared by an engineer registered in California and experienced in the fields of wastewater treatment and public water supply that includes the following:

- (1) Summary of compliance with the monitoring requirements and criteria in sections 60320.010, 60320.020, 60320.030, 60320.040, and 60320.050;
- (2) Summary of any corrective actions taken as the result of violations and any suspensions of recharge of recycled water; including a schedule for making needed improvements.
- (3) Any detections of monitored constituents and any observed trends in the monitoring wells,
- (4) Information related to travel of recharge waters, i.e., the leading edge of the recharged water plume,
- (5) A description of any changes in the operation of any unit processes or facilities, and
- (6) A description of any anticipated changes, along with an evaluation of their expected impact on subsequent unit processes.

(b) Every five years, the project sponsor shall update the engineering report and submit it to the RWQCB and the Department. The update shall include, but not be limited to, a demonstration:

- (1) That the maximum RWC pursuant to subsection 60320.040(b)(2) and (3) will not be exceeded,
- (2) That the minimum retention time underground pursuant to subsection 60320.010(b) or (c) will be met, and
- (3) Any inconsistencies between groundwater model prediction and observation and/or measurement and how they are being dealt with.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

Section 60320.095. Alternatives.

(a) The project sponsor may apply to the Department to reduce the distance in subsection 60320.010(c) or (d) to as little as 200 feet, if the sponsor can demonstrate with tracer test results that the required retention time will be achieved at the proposed alternative distance.

(b) The project sponsor may apply to the Department to use one or more wastewater constituents as a surrogate for nonregulated contaminants (section 60320.040) in place of TOC. Department approval of the alternative will be based on:

(1) Ability to quantify the constituent(s) in the wastewater, recycled water and groundwater samples;

(2) The effect of the engineered and natural treatment systems on the constituents is similar to the effect of the systems on the potential harmful nonregulated components of the organic material in the wastewater and recycled water; at least one of the constituents shall be present in the treated water at a level that enables a determination of constituent reduction through the treatment process; and

(3) Identification of treatment performance standards for the constituent(s) that are as protective of public health as the TOC criteria in section 60320.040.

(c) The project sponsor may apply to the Department to modify the responses to exceeding the total nitrogen limit in subsections 60320.020 (e) and (f), if it can demonstrate that it can track the volume of recharge water containing high nitrogen levels as it moves from the recharge area to drinking water wells, and that, based on sufficient data from pertinent monitoring, it can ensure that the nitrate-N or nitrite-N MCLs have not been and will not be exceeded at any time in drinking water supply wells.

NOTE: Authority cited: Section 208, Health and Safety Code and Section 13521, Water Code. Reference: Section 13520, Water Code.

ENDNOTES

These notes are not part of the draft regulations, but are included to provide readers with additional information and guidance about the intended application of the draft regulations, and the specific contaminants that are or may be involved.

ENDNOTE 1. New state and federal MCLs will be added as they are adopted (e.g., arsenic, radon, perchlorate, chromium-6)

ENDNOTE 2. GRRPs should select methods for nonregulated chemicals according to the following approach:

- Use drinking water methods, if available.
- Use DHS-recommended methods for chemicals in subsection (f) (e.g., 1,2,3-TCP, NDMA).
- If there is no DHS-recommended drinking water method for a chemical, and more than a single EPA-approved method is available, use the most sensitive of the EPA-approved methods.
- If there is no EPA-approved method for a chemical, and more than one method is available from the scientific literature (e.g., peer-reviewed journals), after consultation with DHS, use the most sensitive method.
- If no approved method is available for a specific chemical, the GRRP's laboratory may develop or use its own methods and should provide the analytical methods to DHS for review. Those methods may be used until DHS-recommended or EPA-approved methods are available.
- If the only method available for a chemical is for wastewater analysis (e.g., a chemical listed as a priority pollutant only), sample and analyze for that chemical in the treated wastewater immediately prior to reverse osmosis treatment to increase the likelihood of detection. Use this approach until the GRRP's laboratory develops a method for the chemical in drinking water, or until a DHS-recommended or EPA-approved drinking water method is available.

ENDNOTE 3. These chemicals are selected from DHS' chemicals with action levels; chemicals already included in analysis required under subsections (f)(1)(A) or (B) are not included here. These chemicals have either been detected at least once in drinking water supplies, or if not detected, they are of interest for some specific reason [e.g., formaldehyde is of interest because it may be a byproduct of certain treatment processes]. The chemicals are: n-butylbenzene, sec-butylbenzene, tert-butylbenzene, carbon disulfide, chlorate, 2-chlorotoluene, diazinon, 1,4-dioxane, formaldehyde, isopropylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.

ENDNOTE 4. N-Nitrosodiethylamine (NDEA) and N-Nitrosopyrrolidine are the only two that would be specified by DHS. Monitoring for these nitrosoamines is desired, because of the DHS' experience with N-nitrosodimethylamine (NDMA), a Priority Pollutant and one for which DHS has established an action level.

ENDNOTE 5. DHS has specified the following endocrine disrupting chemicals, pharmaceuticals and other chemicals for monitoring:

- Hormones: Ethinyl estradiol, 17-B estradiol, estrone
- "Industrial" endocrine disruptors: bisphenol A, nonylphenol and nonylphenol polyethoxylate, octylphenol and octylphenol polyethoxylate, polybrominated diphenyl ethers.
- Pharmaceuticals and other substances: acetaminopen, amoxicillin, azithromycin, caffeine, carbamazepine, ciprofloxacin, ethylenediamine

tetra-acetic acid (EDTA), gemfibrozil, ibuprofen, iodinated contrast media, lipitor, methadone, morphine, salicylic acid, and triclosan.

These samples are being collected for information purposes; there are no standards for the contaminants listed below and no standards are anticipated at this time and analytical methods may not be widely available (See Endnote 2).

Some interested parties have asked for some clarification of what would happen if any of these contaminants are found. In response, we offer this: Monitoring for these chemicals is viewed as a diligent way of assessing and verifying recycled water quality characteristics, which can be useful in addressing issues of public perception about the safety of recharge projects. Further, should there be a positive finding, the recharge agency and DHS can give the result due consideration as to whether it is of concern or not. Just what such consideration might entail would depend on the knowns and unknowns of the particular chemical, including its potential health effects at the given concentration, the source of the chemical, as well as possible means of better control to limit its presence, treatment strategies if necessary, and other appropriate actions.

Again, we stress that such monitoring is not for compliance purposes, but for informational use only.

The specific contaminants targeted for monitoring may vary among GRPPs, depending on their individual engineering reports and groundwater basins. If a GRPP has additional reports for its own project using prior data that address chemicals identified below, or reports for its own project using data on other chemicals addressing the effectiveness of the treatment processes in limiting the release of endocrine disruptor chemicals into recharge water, those reports should be made available to DHS to assist in developing a list of chemicals that would build upon or supplement the already available information. A GRPP that has little monitoring information should plan on collecting more analytical data related to endocrine disrupting chemicals and pharmaceuticals in its recharge water. A GRPP that can demonstrate a history of prior sampling, analysis, and related research, as well as an on-going program on endocrine disrupting chemicals and pharmaceutical in its recharge water will likely have fewer contaminants specified by DHS for analysis under this section.

GRPPs will not be required to conduct an ongoing monitoring program for contaminants under this section, unless good indicator chemicals can be identified through this monitoring. Depending on the results of analyses and other information discussed above, required monitoring may be of short duration (e.g., twice a year for two or three years). If good indicator

chemicals can be identified, requirements for their monitoring will be considered. This notwithstanding, DHS recommends an ongoing monitoring program for these types of chemicals.

ENDNOTE 6. Although DHS has repeatedly requested input from the regulated community and from other interested parties about values for the UV dose or the hydrogen peroxide dose, no suggestions have been received. DHS is considering how to implement a requirement for UV and hydrogen peroxide that would be effective, and not just treatment for the sake of treatment. DHS continues to seek ideas on how this should be regulated.